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Local Skirmishes in the Construction of (Global) Digital Business Communication Technologies

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LOCAL SKIRMISHES IN THE CONSTRUCTION OF (GLOBAL) DIGITAL BUSINESS COMMUNICATION TECHNOLOGIES

Petit différend dans la construction de technologies (globales ?) numériques

Completed Research Paper

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Abstract

This paper applies Latour's (1992) translation map as a device to explore the development of and recent conflict between two data standards for the exchange of business information – EDIFACT and XBRL. Our research is focussed in France, where EDIFACT is well established and XBRL is just emerging. The alliances supporting both standards are local and global. The French/European EDIFACT is promulgated through the United Nations while a consortium of national jurisdictions and companies has coalesced around the U.S. initiated XBRL International (XII). We suggest cultural differences pose a barrier to co-operation between the two networks. Competing data standards create the risk of switching costs. The different technical characteristics of the standards are identified as raising implications for regulators and users. A key concern is the lack of co-ordination of data standard production and the mechanisms regulatory agencies use to choose platforms for electronic data submission.

Keywords: Business Data standards, EDIFACT, XBRL, ebXML, Actor Network Theory, France

Résumé

L'article présente la confrontation entre deux standards: Edifact déjà bien implanté en France et XBRL actuellement en phase d'émergence. Utilisant la sociologie de la traduction (Latour, 1992), les auteurs dressent une cartographie dynamique des enchaînements sociaux et techniques sur un plan local et global.

Abstract in French

Le présent article analyse le développement et le conflit entre deux standards impliqués dans la vie des affaires. Pour cela, les auteurs utilisent le concept de diagramme socio-technique de Latour (1992). La recherche est menée en France où EDIFACT est bien établi et où XBRL est en phase d'émergence. Les réseaux d'alliance concernant les deux standards apparaissent comme locaux et globaux. Le Franco/européen EDIFACT est promulgué via l'ONU tandis qu'un consortium de juridictions locales et des entreprises s'unissent autour de l'entité initiale américaine XBRL II. Nous suggérons que les différences culturelles créent une barrière pour la coopération entre les deux réseaux. Cette compétition entre standard peut générer des coûts de transfert. Les caractéristiques techniques des standards sont identifiées et concernent de fait les régulateurs et utilisateurs. Un élément clé est le manque de coordination dans la construction des standards et dans le choix des plateformes de la part des institutions réglementaires pour l'utilisation de données électroniques.

Introduction

Data standards for the exchange of business information over the internet are a potential source of strategic advantage and technical efficiency for businesses (Turban et al, 2004). The need for a standard for exchange and the possible benefits to the world economy was recognized by the United Nations when it laid the foundations for its Centre for Trade Facilitation and Electronic Business (UNCEFACT) in 1996 (http://www.unece.org/cefact/about.htm). The 'global remit' of UN/CEFACT includes the creation of electronic business standards for the facilitation of the exchange of goods and services. It seeks to co-operate with other standard setting bodies such as the International Organization for Standardization (ISO) to create a unified and coherent set of standards. It has produced UN/CEFACT's Modeling Methodology (UMM) and United Nations/Electronic Data Interchange for Administration, Commerce, and Transport (UN/EDIFACT).

The EDIFACT data standard is widely used in Europe and up until recently was the uncontested incumbent financial data exchange format in France. Since the development of the EDIFACT standard in the early 1990s, a significant shift in technology for data exchange on the internet has occurred. Extensible Mark-up Language (XML) is an offshoot of SGML and has been widely adopted on the internet as a basis on which to develop specific formats for data exchange (Scheier, 2003). A number of standards based on XML have been developed in the business sphere, but the one challenging EDIFACT in France is eXtensible Business Reporting Language (XBRL). The two data standards are based in part on different technologies and have somewhat different scope but share common ground in which the contest is being played out.

The creation, development and diffusion of data standards are profoundly socio-technical activities (Hanseth and Monteiro, 1997). Despite the apparently mundane business context, the forging of alliances and the battle to construct networks to protect both the ideals and vested interests of the groups involved are fraught. This paper adopts Latour's (1992) approach to mapping the translation of technologies to highlight the technological and social arrangements emerging in the conflict between the standards. These arrangements are both 'local' and 'global'. In geographical terms the standards have their genesis in different locations (France and the U.S.) and their development reflect different social and cultural attitudes. They are also local and global as described by Law and Callon (1992) – bringing together resources at the global level to provide ongoing support for the project and at the local level the actors and objects necessary to create the technology in situ.

It is important to study the controversy as it occurs because it is common for standards to become 'without history' or for the story of their creation to become 'legendary' or unreal (David, 1985). The work of creating the standard takes precedence over any thought to preserve working papers and committee minutes or recall discussions or opinions. These sources record the tensions and compromises made that might help later users or designers to understand how the system got to be the way it is. Latour (1987) terms the process of 'forgetting' the antecedents to

the technology as 'black boxing.' He emphasizes the need for the Actor Network Theory (ANT) researcher to try to be present when the science (or technology) is unsettled, where controversy rages. This is very much the position we find ourselves investigating in relation to the competition for reporting standards that is taking place between the incumbent standard EDIFACT, its emergent sibling ebXML and the challenger, XBRL.

Competition between technology standards has been explored in the literature (Suarez, 2004; de Vries, 1999) and key features identified there are relevant to our setting. EDIFACT and XBRL are business data communication standards. In common with many communication standards their value depends in part on the number of users or the installed-base (Bonaccorsi and Rossi, 2003; Katz and Shapiro, 1985; Shapiro and Varian, 1999, p. 13). This is known as network externality, since the size of the network within which the standard may be applied is important to the viability of the standard. The greater the number of users; the more the potential for information exchange using the standard and there is also likely to be a greater range of complementary software and support services (Katz and Shapiro, 1985; Shapiro and Varian, 1999). An incumbent standard has an advantage since it already has an established network of users.

A challenger also faces the problem that the standard may have become integrated into the business infrastructure. An IT communications infrastructure contains layers that are made up of the hardware, software, standards and human skills and knowledge that together make it function as a foundation for activities (de Vries, 1999, pp. 31-32, 212-213). Hanseth (2001, p. 60) succinctly describes infrastructure as 'an evolving, shared, open and heterogeneous installed base." Once a technology object is embedded as part of a multi-layered infrastructure it becomes taken for granted (black boxed) and there will be significant resistance to disrupting the infrastructure even to achieve technological improvements. This means that the timing and sequence of development of technologies, known as path dependence, is important (David, 1985; Loch and Huberman, 1999 cf Dechow and Mouritsen, 2005). The classic example is the QWERTY keyboard that had been so widely diffused and people and computer systems had adapted to it, so that a theoretically better keyboard layout failed to achieve acceptance (David, 1985). Network externality, path dependence and the nature of infrastructure are reinforcing effects in the business data standards setting we are concerned with. They help explain why a change in standard can require significant effort from actors and is potentially disruptive for many stakeholders.

In this study we aim to contribute to the literature on business data standards by applying Latour's (1992) translation diagram as a device to depict the translations and alignments in establishing an infrastructure for the electronic transmission of financial data to regulators. We first apply the construct to the translation of human action into computerised infrastructure within the context of the communication of business data. Then the more particular setting of EDIFACT in France and the emerging controversy with XBRL are examined. Creating and maintaining an information infrastructure is a complex socio-technical task the difficulty of which has often been underestimated (Hanseth and Monteiro, 1997). By capturing events, choices and attitudes as they unfold the researchers hope to allow participants in the process and other interested parties, an opportunity to reflect. It also serves as a record for future actors of how the system came to be what it is. We offer some analysis of what we discern as themes that emerge from the research and their potential impacts on stakeholders. The themes include the effects of technical differences between the standards and the importance of path dependence (timing) in their development. The embedding of EDIFACT in the information infrastructure in France before the emergence of XBRL is significant in the choices faced by participants. Another theme is the contrasting perspectives of local and global and how they have impacted the data standards' development and 'positioning.' This is identified as a factor underlying the inability of the groups that are constructing the standards to co-operate.

The next section of the paper describes the methodological foundations and relevant literature, including the sources of data. The following section introduces the first translation map based on Latour (1992) depicting the problem domain that is the background for the local controversy of interest. The fourth section describes the particular features of the French environment that are distinctive for financial reporting. The following section traces the emergence of the EDIFACT standard and its application in France. The controversy surrounding the entry of a competing standard into the 'local' setting is described in the sixth section. The paper concludes by drawing out the implications of the key themes for local and global stakeholders.

Methodology and Literature Review

The data standards that are the subject of this research are EDIFACT and XBRL. They are Information Communication Technology (ICT) standards for the business domain. A standard in the information technology

context may be defined as an "approved specification of a limited set of solutions to actual or potential matching problems, prepared for the benefits of the party or parties involved, balancing their needs, and intended and expected to be used repeatedly or continuously, during a certain period, by a substantial number of the parties for whom they are meant" (de Vries, 1999, p. 15; see also de Vries, 2006).

The definition reflects the complex sociotechnical processes used to construct standards (Hanseth and Monteiro, 1997; see also Bowker and Starr, 1999; Ciborra et al, 2001). Camp and Vincent (2004, p.161) argue that there is a need to more closely study how internet standards are defined because 'if code is law then standards bodies are governments'. In accordance with this recognition there is a growing literature in the area (e.g., Bonino and Spring, 1999; Burrows, 1999; Choi, Raghu and Vince, 2004; Fomin et al., 2003; Garud, Jain and Kumaraswamy, 2002; Hanseth, 2001; Jakobs, 2000; Lyytinen and King, 2006; Nurmilaakso, Kotinurmi and Laesvuori, 2006; Shapiro and Varian, 1999; de Vries, 1999). The research into data standards draws on a number of theoretical approaches, including economics, institutional theory and governance, and sociological perspectives.

We have chosen Actor Network Theory (ANT) to provide the theoretical constructs for our research (see Latour, 1987, 1991, 1992, 2005; Lash, 2001; Law, 2002; Law and Callon, 1992). ANT is part of a wider theoretic understanding of social arrangements called 'postsocial' (Knorr Cetina, 2001). Using this perspective, relations are not seen as dependent only on human actions nor are they determined by technology. The penetration of technologies into every part of our lives, our reliance on them and even our preference for them over other social interaction has afforded them the place of actors in society (Knorr Cetina, 1997, 2001; Knorr Cetina and Bruegger 2002; Latour, 1996, 1999; Lowe, 2004). ANT research is concerned with the development of coextensive networks of human and non-human actors (Latour, 1987, 2005; see also Gendron and Barrett, 2004; Dechow and Mouritsen, 2005; Jones and Dugdale, 2002; Lowe 2004), which in the case of ICT, includes people as users and consumers, businesses, government, private regulators, software, hardware and existing infrastructure. Latour (1987, 2005) encourages the researcher to follow the actors as they fabricate social structures. The networks and objects are best traced before they become black boxed when the controversy is at its height and the outcome uncertain.

This approach has been used by others to research communication technologies and data standards (Hanseth *et al.*, 2004, 2006; Heeks and Stanforth, 2007; Tuomi, 2001) and in the business setting (Ciborra *et al.*, 2001; Gendron and Barrett, 2004; Dechow and Mouritsen, 2005; Jones and Dugdale, 2002; Quattrone and Hopper, 2005). We believe it is appropriate for our setting which combines ICT and organisation because an analysis that privileged either the technology or the social would not be able to explore the crucial interaction of the two in creating and diffusing business communication standards.

Latour (1992) describes delegating roles to objects to solve problems, reduce effort or encourage specific programs of action. For example a hinge on a door resolves the problem of creating a means of entry to a building and it (with the door) also channels visitors' entrance and modifies their behaviour:

I will call, after Madeleine Akrich's paper (this volume), the behavior imposed back onto the human by nonhuman delegates prescription. Prescription is the moral and ethical dimension of mechanisms. In spite of the constant weeping of moralists, no human is as relentlessly moral as a machine, especially if it is (she is, he is, they are) as "user friendly" as my Macintosh computer. (Latour, 1992, p. 232)

Designers must therefore have a view about the actors in a desired program of action:

Designers thus define actors with specific tastes, competencies, motives, aspirations, political prejudices, and the rest, and they assume that morality, technology, science and economy will evolve in particular ways. A large part of the work of innovators is that of 'inscribing' this vision of (or prediction about) the world in the technical content of the new object. (Akrich, 1992, p. 208; quoted in Hanseth and Monteiro, 1997, p. 184).

In the process of designing and creating a technology object individuals and other objects will be brought together by translating their interests to coincide with that of the desired program of action. The designers inscribe into the object the pattern of use and human behavior that they anticipate is necessary, but they may be mistaken, others may oppose their view or other factors may change. The inscriptions may not succeed and the actual use of the object may vary from the designer's intention. "Rather than following its assigned program of action, a user may use the system in an unanticipated way, she may follow an anti-program" (Hanseth and Monteiro, 1997, p. 186; see also Latour, 1991). Hanseth and Monteiro also suggest that "some technologies inscribe weak/flexible programs of action while others inscribe strong/inflexible programs" (1997, p. 186). Latour (1987, 1994) describes this as the strength of the immutable mobiles. By studying the translations of interests involved in a conflict between

electronic standards and the nature of the technology object itself, we can learn about its character and its likely implications for humans and non-humans.

We have deployed Latour's (1992) device of a translation diagram to map the broad tensions between the program of action and the anti-program as it applies in our setting at two different levels of granularity. The diagram is based on an approach to linguistic analysis. Associations in a sentence (made by adding elements using 'and') are represented on the horizontal axis. Substitutions (made by replacing elements, so they are optional – one 'or' the other) are represented on the vertical axis. A competent speaker of the language is able to determine which combination of substitutions and associations is meaningful in a sentence. Using the same logic, Latour (1992) applies the vertical axis of the translation diagram to represent the actions to achieve the program through translation or substitution of another actor, while the horizontal axis reflects the number of elements joined with the program (increasing to the right). The program of action is plotted to show the translation of actors aligned and the line is plotted to distinguish the program that is being studied from the anti-program that it seeks to avoid or replace (refer to Figure 1, see Latour, 1992). "The point of the story is that it is impossible to move in the AND direction without paying the price of the OR dimension, that is, renegotiating the sociotechnical assemblage" (Latour, 1992, p. 251).

Assemblages of technical specifications, such as EDIFACT and XBRL, are technology objects and agents of change in business communications and the technology market (Bonino and Spring, 1999; Bowker and Starr, 1999; Lash, 2001). Once they are assembled into procedures for exchanging data they become 'black boxed' or taken for granted as part of communication infrastructures (Bowker and Starr; 1999; Hanseth et al 1996; Hanseth and Monteiro, 1997). Our purpose is to open an EDIFACT 'black box' in the light of the challenge from XBRL and study the programs inscribed in both.

In the case of the emergence of XBRL in France the outcomes are not yet clear – the networks are just being formed and the researchers have had the opportunity to follow events from the early stages. In the case of EDIFACT, this standard had achieved the status of an infrastructure standard and participants must look back to act as informants regarding its development.

Research domain and data collection

Electronic Data Interchange (EDI) may be "defined as a set of message standards to enable the exchange of commercial transaction data between autonomous application systems without human intervention" (Pfeiffer, 1992 quoted in Graham et al, 1995, p.4). XBRL has two broad developments; XBRL FR and XBRL GL. The GL or 'global ledger' taxonomy is pitched at the journal level – that is after transactions but at the internal transaction recording level of an accounting system. The FR taxonomies are designed for 'financial reporting.' EDIFACT's focus, in line with the definition of EDI is at the transaction level. It appears then that the domains of the standards are complementary rather than competing. However, there are areas of overlap. XBRL has mainly been taken up by regulators (Locke and Lowe, 2007). This is also an area in which EDIFACT has a role in France. Since communicating specific fiscal facts may be undertaken in either standard – they have an area of overlap.

EDIFACT and XBRL are built on different technologies. Later in the paper we discuss the significance of the timing of their development for this outcome - an issue of path dependence. However, for now it is important to note that we are not seeking to compare EDIFACT and XBRL based on their similarities. Rather we are observing a conflict that came to our attention and analysing the alignment of the actors in the networks in order to raise questions about the unfolding of the data standards choices in one setting.

The researchers have conducted interviews with participants in the development of EDIFACT and XBRL in France. They have also attended international XBRL conferences and observed newsgroup discussions over a five year period. The interviews with French participants were conducted over the period from late 2005 up to April 2008. 17 interviews were conducted, 13 face to face, two by telephone and two through email exchanges. The average duration of the interviews was an hour. One participant was interviewed twice to follow up on relevant developments. XBRL conferences in Auckland (New Zealand), Boston, Madrid, Munich, London, and Vancouver have been attended by at least one of the researchers. The first XBRL conference to be held in France in June 2007 was also attended.

Five of the informants were contributors to the development of EDIFACT, two were representatives of XBRL in France, four were employed by credit companies concerned with using and supplying company information, one

was a senior employee with a software vendor in France, four are employed in regulation of banks or otherwise part of government bodies, and one is a consultant. All of the interviews except one were conducted in French.

Documents, web-sites and many professional magazine and newspaper announcements were also useful in providing background for the study. The assemblages described here are still forming and the technologies are not yet settled. While this limits the researchers' ability to 'resolve' how the formation of networks and translation of ideas will play out, it does allow us to capture them in the process of fabrication, before they are settled and taken for granted by actors. In common with other ANT studies we must make choices about how we focus our research (Hanseth and Monteiro, 1997; Latour, 2005; Miller, 1997). The data standards of interest have developed over time and in multiple locations, so we must necessarily select the elements of the networks and events we report, but we do so in a way that, we believe, represents the issues and controversies.

Translation and Context

The focus of this paper is on business data communication in a specific geographic location – France. Telecommunications and the internet break down barriers to time and space (Lash, 2001; Quattrone and Hopper, 2005). Social, historical and cultural barriers remain embedded in the way things have been done and so it is that despite the apparent irrelevance of geographical location, the exchange of business data is idiosyncratic to France. To describe our particular setting, we are going to first consider the more generic context of business data communication in order to describe the general problematisation common to the competing networks that are the focus of our subsequent discussion.

Governments have historically regulated citizens by collecting and (perhaps) redistributing income based on tangible records. The need for records is based on the presumption that without a 'material' witness to the submission, humans will seek to minimise what they pay and lie, cover-up or otherwise forget the required data. Designers have sought a system to hold citizens accountable but have been limited by available technology. Very early records were in cuneiform engraved on tablets and more recently manually completed with ink and paper. Another significant change in the technological capacity to record, store and process data came with the use of computers. As the available technology develops from written inscriptions (Bloomfield and Vurdubakis, 1997; Latour, 1994; Star, 1996) to digital, the prescription of the technology for humans changes (Hanseth and Monteiro, 1997). Hand written records would often be partial and contain errors - but most particularly are necessarily less standardised (harder to read) and less detailed than computerised records as they are limited by the individualised and arduous nature of manual inscription processes. This limits the quality, frequency, timeliness and extent of surveillance that government can impose. There are clear benefits to government of enrolling increasingly sophisticated technologies into the task of making citizens accountable. But how are the corporations and citizens persuaded to join the network? Governments may use coercion alone, but this makes the system very exposed to subversion and 'work arounds' by unwilling participants. Persuading the majority of participants that the technology makes it easier and cheaper for them to comply problematizes the existing approach and enrols their participation in the 'solution' (see for example www.sbr.gov.au). Government regulators may also argue that the new system will be more accurate and lead to 'fairer' outcomes. The increased discipline of the system and surveillance is balanced by what is claimed to be fairer and less burdensome and so citizens become willing participants in fabricating a system for their own surveillance.

The move to computerised systems was a very significant one. However, before the use of ICT and the internet human intervention and perhaps further manual processing was required to transfer information between computers. For example, data may have been downloaded to punched cards or tape and physically sent to the other computer site. More recently magnetic disks (of various sizes) and CDs have been used (sometimes to the dismay of government bodies when they are lost or stolen). Digital systems that require significant human intervention allow more detail to be collected and processed than a manual system, but the time lapse between computer processing and remittance to government of the medium (punched cards or CDs) may be measured in weeks and may be plagued by errors if reformatting of data or manual rekeying is required. The widespread use of the internet has enabled government to create web portals through which to collect and disseminate information with individuals and to achieve computer-to-computer data exchanges with no need for human intervention (see for example e-Government Unit, 2005). The acceptance of the internet in western societies has created a postsocial technotope (Geels, 2004) in which instantaneous information retrieval and transactions on-line are accepted as normal. This provides an environment in which there are many potential allies for a program to insert government information collection into individual transactions and events and promotes interoperability as fundamentally important.

De facto standards for the electronic exchange of data emerged with the domination of Microsoft products (such as Word and Excel) and the connectivity between computers that can link to the internet using HTML as a standard way of representing formatted text. ASCII text and HTML formats are also used (for example by the US Securities and Exchange Commission). There are many standards for EDI and XML. The difficulty has not been the lack of standards, but rather the proliferation of 'solutions' so that interoperability has been restricted to isolated communities (Graham et al, 1995). The network externality problem means that greater efficiency in the exchange of data is created by agreeing on a set of standards that cover domains with as little redundancy as possible. Ultimately with comprehensive data standards and technological capacity (particularly in bandwidth) it has been suggested that it would be possible for government to engage in real time monitoring of regulated entities. In particular banking regulators could monitor the daily transactions of banks at risk of breaching their liquidity requirements (XBRL Conference, Boston 2005). It will be interesting to see if the current crisis in the financial sector creates a favourable climate for the development of increased regulatory monitoring and intervention through technology.

Each of the broad translations described above involve increasing use of technology and a changed role for human actors, but up to the point described, direct machine to machine communication of business data with a high semantic content and without substantial human intervention while technically possible, is a highly contested domain for many coalitions with different interests. The program (Latour, 1992) in the context of our research – the problem to be solved – is to fabricate a way for many companies, individuals and accountants to provide data to governments. The program might seek to do this by automating the process as much as possible to reduce the cost to the submitting entity, reduce the errors (deliberate and unintended) from the point of view of the government agency, and to increase the speed and timeliness for all parties. The anti-program in the early days came from a lack of technology. First, computers were not available, and then telecommunication between computers was not available. While currently technologies exist to permit automated data exchange, difficulties with local networks of interests sometimes prevent change. At other times already existing technologies may be 'black boxed' so that they are not open to change. It is the latter stages of these developments that we will give more attention to in the following sections. For now the following translation diagram, based on Latour (1992), depicts the general program for the submission of business data to regulators (see Figure 1).

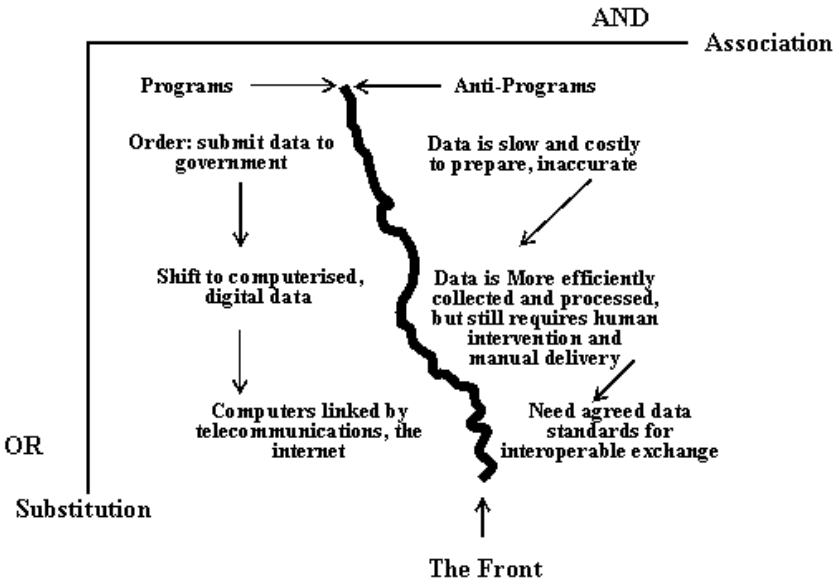

Figure 1: Translation of Business Data Communication

The Local Setting - France

Although the move to electronic exchange of data is a global one, French government and accounting regulation had historically developed distinctive characteristics that placed French institutions or standard setters in a strong position to create the interoperable platform needed. One of the key factors was the existence of a common chart of accounts used by all companies. The Plan Comptable Général itself was the outcome of networks of allies (and

enemies in the case of the claimed influence of the Goering Plan) and its fortunes have fluctuated over the years (Colasse and Standish, 1998; Roberts, 2003; Standish, 1990). It was promulgated in 1947 and has applied in both public and private enterprises since then. In 1948 it generated interest in a standardised accounting code for Europe (Standish, 1990, p.350). Its establishment and use in France since that time provides a very different setting for accounting and professional accountants in France compared to that in the Anglo-American context. The latter countries and their colonies regulated the outputs of accounting (reports) and required the proper recording of accounts, but did not prescribe the details of that process. The essential difference perhaps lies in the French attitude of *dirigisme* – economic and social regulation by the state. The requirement to use a standard chart of accounts in France represents a significant regulation of the process of accounting as well as its outputs and it generated significant opposition at its introduction (Standish, 1990). A senior employee of a French company expressed it; 'France is Descartes' country and has its proper norms. We consider the Plan Comptable Général as a beautiful intellectual structure.'

The weight of influence has changed since interest in a standardised chart of accounts was first excited in 1948, however. In the latest of three amendments to the Plan the process of harmonising it with International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board has been significantly advanced (www.focuspcg.com). French resistance to the 'invasion' of foreign accounting practices is documented in the literature (for example, Colasse and Standish, 1998; Ramirez, 2008). The requirements of the European 'accounting directives' (including the 4th and 7th) to co-ordinate national laws governing the annual accounts of public limited liability companies are designed to facilitate a single European capital market. These directives, along with other factors, have progressively shifted the French approach to accounting and its regulation closer to the European consensus, which in turn is increasingly shaped by Anglo-American capital market domination (Ramirez, 2008).

Nonetheless, the French emphasis on standardised processes of accounting – down to the level of the chart of accounts – did place them in a superior position when the need to exchange business data electronically required participants in the exchange to agree a standardised way of representing elements of data. This definition of data is generally known as meta-data. A common framework for accounting information was already in existence in countries adopting the Plan Comptable Général and an attitude that accepted that data items could be defined by the state was already established. This may explain the strength of the role of Western European countries in the accounting working group of UN/CEFACT (D14 and then later TBG12; EDIFICAS informant and see also Graham et al, 1995).

Another contextual factor that has contributed to the development of EDI reporting to government bodies in France was the creation of what is now the Directorate General of Administration and Civil Service and a program of reforms beginning with the 'Modernisation de l'état français' order in 1945. The purpose is to motivate the "State to constantly upgrade to adapt to changes in the world and society. This 'reform of the state' must make the administration more efficient and improve services provided to users' (www.ladocumentationfrancaise.fr/dossiers/modernisation-etat/index.shtml). The concurrence of the 1998 programme of government action for the Information Society (PAGSI) which promoted the 'widespread use of websites of public services and online forms of government' (www.ladocumentationfrancaise.fr/dossiers/modernisation-etat/index.shtml) with the development of EDIFACT and the Je Declare.com portal suggests a conducive environment for progress.

The Emergence of EDIFACT

With the widespread use of computers to process data and generate accounting reports, accountants faced the difficulty posed by the inability to exchange data between different systems. The many different proprietary systems available in the 1980s had 'closed' systems for data exchange in the hope of 'locking' customers into their system and getting powerful customers to require supply chain partners to adopt the same software (Garud and Kumaraswamy, 1993). This is a particular issue for accountants because in public accounting firms they are involved in receiving data from many clients and often have a significant intermediary role in then further submitting data and reports in required format to government agencies.

In 1992 a French non-profit body was formed as the result of an initiative of the l'Ordre des experts-comptables (the French accounting professional association) to promote Electronic data interchange for fiscal, informational, countable, analytical and of audit, and social (abbreviated to EDIFICAS France) was formed. The initial members

included representatives of a total of eleven accounting and consulting firms and software companies (www.edificas.fr). Its purpose was to promote the use of EDI for the exchange of business information. A key task was to develop an open standard to unlock the possibilities of ICT for data exchange. EDIFICAS is widely identified as a singularly French initiative (e.g. in XBRL liaison report, 2000; Wikipedia entry). There is however, a European EDIFICAS that similarly was motivated by accounting professional bodies and included representation from Belgium, the Netherlands, Denmark, Finland, England, Germany, Italy, and Spain (EDIFICAS informant). The participation of the wider European countries fell away, however, leaving a core membership of (French speaking) Belgian and French representatives – resulting in the identification of EDIFICAS as a French body. There was significant support for EDIFICAS in France. In addition to the support of the l'Ordre des experts-comptables it was accredited as a sectoral community by the organization of coordination EDIFRANCE.

In the early 1990's the technological setting was of the growing use of the internet but XML and the large storage capacities that are available today were not yet imagined. The project to break through the proprietary hold on EDI was just ahead of the technology that would significantly change the environment for ICT. Working within these restrictions, the members of EDIFICAS took the position that they did not want to create another standard, they wanted the authority and rigour associated with creating a *norm*. They achieved recognition by the European Commission and by the United Nations. Conforming to the procedures and requirements of the UN and the International Organization for Standardization (ISO), members of EDIFICAS formed the Working Group D14 in charge of accounting, auditing, registration and financial information services in the UN Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT) project (see Graham et al., 1995 for further details).

The decision to align the creation of the standard with the UN and ISO was a pivotal one for the EDIFICAS. It provides the authoritative support, careful procedures and checks and balances not present in many 'market' developments of standards. This type of approach can be considered to fit well with the administrative style and culture of France. The cost, however, may have been a slower delivery of elements of the standard (EDIFICAS informant; Graham et al, 1995). The standard messages of the EDIFACT that have been developed are shown in Table 1.

Table 1: EDIFACT Standard Messages

Message	**Purpose**
ENTREC (accounting entries)	collection of entries into a journal
LEDGER	provides a series of accounts such as general ledger, cost accounting, budget ledger
BALANC	any kind of trial balance
CHACCO (Chart of Accounts)	to transmit any type of chart of accounts
INFENT (Enterprise information)	the generic container for any electronic declaration procedure (e.g. fiscal return, VAT declaration, reporting, financial statement, etc.)

Each of the approved messages comes with the imprimatur of the United Nations (see Figure 2).

Figure 2: Extract of cover page from EDIFACT ENTREC Message (size reduced)

Putting the standard to work

A distinctive characteristic of data standards for communication is that they must develop a user base that is sufficient to sustain their value. As discussed earlier, network externality means that the value of a data standard is determined by its ability to facilitate communication between many parties. If only a few recognize and use it - it fails to attract further users and ultimately may fall into complete disuse (Garud and Kumaraswamy, 1993; Shapiro and Varian, 1999; Strader et al., 2007). The problem is that to become widely adopted, potential users want the standard to be already widely used. This makes it difficult to create and diffuse a standard to the point where it achieves a 'critical mass' of users that make it sustainable (Bonaccorsi and Rossi, 2003). Figure 3 depicts a tracing of the program to develop EDIFACT and its embedding in the regulatory infrastructure on the left hand side. The right hand side of the diagram depicts the XBRL inspired anti-program to EDIFACT. The interactions, between EDIFACT and XBRL, will be considered in more detail in the next section. The additional dimension at the top of the diagram reflects environmental factors that, while not drawn into the network, were influential in the setting.

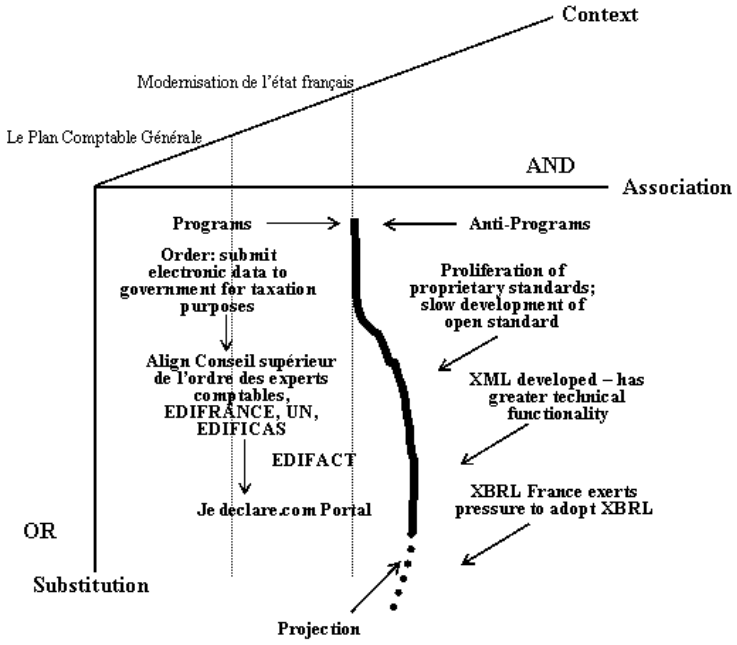

Figure 3: Translation of program to develop EDIFACT

An important early development in the diffusion of EDIFACT was the decision to create a portal for the electronic receipt of submissions to the Ministry of Finance. One informant described the genesis of the Jedeclare.com portal as follows:

Jedeclare.com portal. Yes. 'I declare dot com'. So that is a portal where as well the collector and the declarant have found an interest. This portal was created after Mr. Sarkozy who is now the president of France and was then the minister of finance, said 'I want that the Ministry of Finance collect all the fiscal returns electronically!'. It was in '97, something like that. At that time the French Institute [l'Ordre des experts-comptables] and the Ministry of Finance have examined how to produce this electronic forum. And we have created in the CEFACT EDIFACT portal at that time the message INFENT, information of the enterprise… (EDIFICAS member)

Because of the early work of EDIFICAS, the INFENT message, created as part of EDIFACT was available just as the pressing need to relieve the administrative burden on submitting entities ('declarants') found a powerful champion in Mr. Sarkozy. The result was a platform that still functions very successfully today to provide 'eform interfaces to facilitate teletransmission of fiscal, social, accounting and financial data to administrations, chartered management bodies, banks, social protection organisations and all other appropriate recipients'(http://avallone.archaeon.co.uk/?p=news201004.uk).

The Jedeclare.com portal has been established for so long and is so extensively used in France that it has become part of the infrastructure of data exchange between accounting firms (on behalf of declarants), companies and the government. 90% of accountants (des experts comptables) in France use it (Accountant informant). They represent the many small businesses that the portal has been able to reduce compliance burden and costs for. Many interviewees confirmed that the Jedeclare.com portal works efficiently and effectively and despite the emergence of XML in the late 1990s, there hasn't been any need to consider replacing it. 'Nobody is speaking of EDIFACT, but everybody is using it' (Accountant). As the technology is embedded in the infrastructure it is 'black boxed' and taken for granted.

The Jedeclare.com portal is only one use of EDIFACT. As a UN standard it has been adopted in many, mainly European countries and applied in high tech, civil aviation, retail and tourism industries (Hawser, 2004; www.wikipedia.org). It is embedded in many software systems in these industries and a shift away from it would create the need for an interface between legacy systems and any new standard (Hawser, 2004). The next section describes the emerging controversy created by the XBRL anti-program.

EDIFACT and the XBRL Anti-program

The entry of a competing standard into the 'local' setting is examined in this section, informed by the translation approach we have previously outlined (Hanseth and Monteiro, 1997; Latour, 1992). We describe some of the interactions created by the advent of XBRL and its entry into the French environment. We have shown (see Figure 3) the development of XML and subsequently XBRL as constituting the anti-program which stands in opposition to EDIFACT. The extracts below provide an indication of the fundamental differences that have at times been in evidence between members of the EDIFACT and XBRL groups.

Visibly, my presentation was not appreciated at all for the reason that I was referring to "[electronic] data interchange" and that [XBRL participant] stated urbi et orbi "EDI is dead!" (email from EDIFICAS informant)

I remember in the beginning I was involved in the EDIFACT development it was 'EDI or die' and now it is 'EDI is dead.' But EDI is not dead. (Interview, EDIFICAS informant)

Technology differences and path dependence

Because the EDIFACT standard was developed in the early 1990's it predated the publication of XML (Extensible Markup Language) by W3C in 1998. XML is derived from SGML (Standard Generalized Markup Language) in the same way as HTML (Hypertext Markup Language) (http://xml.coverpages.org/sgml.html). HTML facilitated the standard presentation of web pages, but could not define the semantic meaning of data. XML provides a structure to allow tags to be attached to individual data items. The tags are defined by reference to a taxonomy (data dictionary) that specifies the meaning of each tag in a hierarchical structure.

The taxonomy may be referenced to external sources to allow a user to validate the meaning attributed to tags. An important feature of the tags is that they are expressed in human readable text (Keogh and Davidson, 2005). This means that there is not only the possibility for computer to computer communication, but also human users may 'read' the XML documents. Another feature of XML based standards compared to EDIFACT is that XML as a technology object is more flexible. The 'X' is from extensible and in the case of XBRL for example, the taxonomies themselves may be created from scratch by individual companies or extended to suit their needs. As a result of the tags carrying additional information and retaining human readability – they are also longer and therefore the files sizes for transfer of data are larger.

There has been a 'massive' shift of interest to XML since its publication (http://xml.coverpages.org/sgml.html), although there were also difficulties (Sliwa and King, 2000). XML initially lacked reliable standards that were diffused among enough users to create a viable installed base, while EDIFACT was already safely inscribed into software and platforms and other infrastructure technologies (Hawser, 2004). This path dependence in the development of EDIFACT is a two-edged blade. On one hand it already has an installed base, but on the other, it is using a technology base that may be overtaken by a rival. In the specific domain of financial reporting XBRL has reached a point in 2008 of significant international acceptance. This is particularly evidenced by the SEC's move to mandate its use for filing to the new IDEA database which is to replace EDGAR (Wutkowski, 2008). This has created a suitable environment for proponents of XBRL to push for its adoption for regulatory purposes in France. A

blunt appeal to the contemporary appropriateness of XBRL was made by an XBRL representative and software vendor:

Sincerely and being objective - if France does not implement XBRL, France will be an underdeveloped country! It's like condom and AIDS… Condoms are not always used and chosen but in reality, there is no other possibility. France should not miss this opportunity.

What are the implications for the stakeholders in the process of filing to regulatory agencies of a change to the different technology that is the basis of XBRL? ANT research tends not to discuss stakeholders – focusing instead on the interests of actors who are enrolled into the network of a program. We are using 'stakeholders' to include all actors with a vested interest in the outcomes of the program regardless of whether or not they are even aware of the issues surrounding it. In our context this means that not only the data standard designers and proponents, professional accountants, government regulatory agencies and software vendors, but also the consumers and users of the standard who may actually be unaware that it exists (de Vries, 1999, p.25). In the French setting these users are the submitting entities, the majority of which will be small medium-sized entities (SMEs) who may be required to bear the cost of a change in system without necessarily understanding it.

The readability advantage claimed for XML based standards represents an interesting translation between human and non-human actors. The EDIFACT standard is specifically designed for computer to computer communication and is not designed to invite human intervention through readability. It is more efficient in that it results in significantly smaller files (EDIFICAS informant, www.wikipedia.org). XML on the other hand delegates a role back to the human by offering the option of readability. When Microsoft first submitted an instance document to the SEC, the senior finance officer and the senior IT officer read the instance document (covering many pages) in order to check its validity (presentation at XBRL conference Boston, 2005). This example perhaps being an extreme one an EDIFICAS participant raises the reasonable question – how many times will a human want to read the document compared to the computer? Clearly the number of occasions humans should need to read a document designed for data exchange between computers ought to be very low. Perhaps the human readability fulfills another purpose for the technology – enrolling more support. It has been argued that the ease of interpretation and the ability to read the documents within a web browser will make it easier for smaller entities to adopt it (Hawser, 2004). Given the exponentially increasing capacity of hardware to send and store data the increased file size is perhaps not too much of a 'detour' to make for the potential increased engagement (Latour, 1992).

XBRL's extensibility also offers a role back to the human in the process of instituting regulatory procedures and filing submissions. XBRL accounting taxonomies exist in a number of jurisdictions, but arguably the two most important ones are provided free for use by the US XBRL jurisdiction (http://www.xbrl.us/Pages/US-GAAP.aspx) and the International Accounting Standards Committee (http://www.iasb.org/xbrl/ifrs_taxonomy/taxonomies.html). Because taxonomies may be extended, however, the technology allows a space in which regulators must choose whether or not the weak prescription the technology makes for users should be offset by tighter rules in its use. If the increase in flexibility is not offset by restrictions to extensions of taxonomies then the standard is not standardised and comparability is affected when individual submitters choose to represent essentially similar events in a different way (Marshall, 2001). The SEC's voluntary and mandatory programs for XBRL tagged data have not required a set taxonomy. The claimed benefit the flexibility of taxonomy extensions presents a trade-off. The companies may represent themselves in a 'true and fair' way by making use of taxonomy extensions – but other users – investors and creditors – lose the benefits of automated comparison that tagged digital data should provide. It also hampers the regulatory agencies' ease of supervision because where extensions have been used human intervention is needed to standardize the data that has been 'flexibly' submitted. The trade-off is between using the softer prescription of the new technology as a way of gaining allies among users who are submitting returns and losing benefits for users of the data once it is submitted.

Another implication of changing to a different technology is the switching cost for users (Shapiro and Varian, 1999). The issue for the contending technology is to persuade enough allies that the new solution is the answer to a problem significant enough to make it worthwhile to bear the costs of switching. Where EDIFACT is in use it generally works well and efficiently (Hawser, 2004) which is why an accountant we interviewed indicated that no-one speaks about it – it is not an issue. The switching costs may be significant however. It would require the regulatory agency to set up a new platform for submissions, create appropriate taxonomies and from the point of view of submitting entities, accountants and other users, they need to use outsourcing solutions or new software. The SEC committed $US54 million to their project (www.sec.gov). The simplest solution for submitting entities is to 'bolt on' a system to add the XBRL tags at the end of the accounting process. While the XBRL taxonomies and the schema are free –

the software that vendors need to create to tag up the reports may not be. The level of expertise required to work with XBRL is high and the lack of skilled IT people and overall cost were the reasons the Financial Services Authority in the UK opted not to adopt it, opting for a simpler XML based system (Hadfield, 2006).

The technology differences between EDIFACT and XBRL are partly a result of the path dependence and create implications that should be considered by regulators in choosing to adopt the technologies and for the designers and those who champion the competing standards. In the next section we focus on the controversy surrounding the different approaches to standards construction as it is played out in the French setting and the significance of the choices made to compete rather than to form alliances.

A search for allies

The development of EDIFACT which relied on building support through EDFICAS, EDIFRANCE and UN/CEFACT has been described earlier. The initiative to create a financial reporting standard in XML came in 1999 from Charlie Hoffman and the American Institute of Chartered Accountants (AICPA - the equivalent of France's l'Ordre des experts-comptables) (www.XBRL.org). Hoffman identified the potential and put together an initial test case and with the support of the AICPA instituted a consortium (XBRL International) to develop and diffuse the standard. Participation is based on membership of the consortium and it attracted an international group of stakeholders including accounting professional bodies, large public accounting firms such as Ernst & Young, regulators, software vendors and stock exchanges (www.XBRL.org). In common with other participant created standards, it lacks representation from users of the data produced as a result of the standards (Graham et al, 1995; de Vries, 1999). It was based on a deliberately international model, using a structure for recognising national jurisdictions as members (Locke and Lowe, 2007). It did not, however, conform to the requirements of supra-national standard setting bodies such as the UN or ISO, preferring instead the rapid development possible based on a market-styled rhetoric of participant involvement.

The United nations are an old bureaucracy which does not correspond any more to the constraints of today. We can not wait many years as for EDIFACT project; we (i.e. XBRL group) aim for effectiveness and quickness. (XBRL France informant)

This difference in approach contributes to a negative perception of the XBRL effort in France, however:

A standardisation process is not a Euro pudding! If sectors must converge - it means long term. If there is no norm, each IT services company would seek to "sell" their de facto standard. With EDIFACT all is free! This XBRL standard is not serious." (EDIFRANCE informant)

How to best resolve the governance issues surrounding the creation of data standards has been a topic of debate in the literature (Bunduchi et al, 2005; Burrows, 1999; Nickerson and zur Muehlen, 2006; de Vries, 1999). EDIFACT and XBRL epitomise the contrast between seeking a long-term, carefully thought out solution based on international representation in a formal structure and an emphasis on speed and responsiveness in perhaps a smaller community of interest. The different approaches adopted also reflect the role of the local in global standard setting. The US-based development favoured a market-style structure and spurns the slow bureaucracy of the UN. On the other hand French and western European interests leading the EDIFACT development favour the strength and rigour of the institutionalised process of the UN, which they perceive as adding quality and status beyond being just another standard. The two structures also reflect Law and Callon's (1992) global project level gathering of resources and deployment at the local level. For EDIFACT the resources are drawn from national support for the international UN process and the standard is developed and deployed into French application through EDIFRANCE and EDIFICAS. Similarly, while initially US-based, XII has drawn resources from membership of the consortium by multinational companies and national professional bodies and by running conferences (Locke and Lowe, 2007). The specific deployment into France occurred late in the development of XBRL – with the jurisdiction not gaining provisional status until 2005 (www.xbrl.org). It now has gained links with EDIFRANCE and through the push for pan European systems, to support a single capital market, is gaining strength in France. Indeed, Gilles Maguet who was the part-time secretary general of XBRL France for three years is now secretary general of XBRL Europe (Colgren, 2008).

It is difficult to assess the implications for stakeholders of the different governance and resourcing arrangements adopted by EDIFACT and XBRL. The classic tale of the tortoise and the hare may hold an important moral for the development of data standards in that changes to a standard after it is widely adopted can be costly for adopters and

undermine the perception of its reliability. On the other hand, digital developments are fast paced and where there is a real need for a solution delays can be costly. A significant issue that arises out of the cultural and governance differences between the two organisations behind EDIFACT and XBRL is their lack of co-operation over a closely related standard - ebXML (electronic business XML).

The French associations promoting EDIFACT did see that XML was a significant development and important in the future of specifically web-based data communication. Both EDIFRANCE and EDIFICAS took 'this evolution [of XML] into account since 1997 and modified [their] action plan: … [to include] participation in drawing up innovative solutions by proposing reference specifications based on standards (ebXML, …) aiming to reduce heterogeneity and improve product and service compatibility on the market,...' (www.edifrance.fr). Working through the UN/CEFACT the same group of participants created ebXML based on the existing EDIFACT messages.

Despite the XBRL Consortium's focus on rapid progress there was apparently recognition that the French work in EDIFACT was valuable. Towards the end of the year 2000, meetings between EDIFICAS and XII took place and there was some enthusiasm for building on the work of EDIFICAS and merging the ebXML and XBRL projects. The minutes of the meeting of two representatives of XBRL and one from EDIFICAS identified the following alternatives:

1. Merging XBRL-Europe and EDIFICAS-Europe
2. Establishing a close liaison between both groups, with EDIFICAS Europe being established as an official liaison with XBRL
3. Pursuing the linkage as it exists today. (Minutes of meeting, December 19, 2000)

Benefits for both groups were identified including giving EDIFICAS standards greater reach outside Europe and the benefit it would gain from XBRL's experience with XML. On the other hand, XBRL would gain access to the French 'market' and would benefit from the association with the UN and ebXML. The conclusion was that 'Failing to achieve an agreement would lead to the existence of two competitive standards in some part of the world… [while] a window of opportunity clearly exists today for the two organisations to collaborate. This window of opportunity will not last for long' (Minutes of meeting December 19, 2000). Despite the apparent enthusiasm, in 2002 efforts at joint work ceased:

The CEFACT meeting in Barcelona was the last one where EWG/D14 [UN working group] and XBRL have worked together on the GL [General ledger] topic. At this time, [XBRL representative], the GL champion at XBRL was impatient, and from my point of view, a bit hasty to get a XML GL schema. On CEFACT we were still stuck in the mud of "standardising the ebXML standard", disputing on the best way to apply ISO 11179 metadata to e-business in a multi-sectoral environment. [XBRL representative] announced XBRL GL should go its way. (Email communication – EDIFICAS informant).

The separate development that has resulted in significant differences in the two standards:

The two methods aim at the production of the financial statements in manner automatic … starting from the balance (or of the ledger) countable. …XBRL develops its model starting from the end of the countable chain to go down again gradually towards the ledger …according to the plan of accounts of the company. EDIFICAS developed the model rigorously opposite, on the basis of the writing and of the plan of accounts to succeed with the financial statements and the declaratory obligations of all nature (tax, social, statistical, etc) on the basis of French model where the auditor ensure all these tasks for account of SME. (Web exchange, EDIFICAS members, 2001)

Opinion among informants is divided about whether or not a mapping can still be achieved between the two standards, but given that participants identified the risk of creating competing standards there is a concern for those who end up paying for the inefficiencies of changing standards or maintaining multiple standards interfaces. 'If code is law then standards bodies are governments' (Camp and Vincent 2004, p.161) then who is providing accountability and oversight of these 'governments' as they choose to engage in skirmishes in a battle for territory rather than co-operate?

There is some small hope, however, as contact between the two groups continues as evidenced by a recent communiqué from the UN working group documenting the results of a joint meeting with XBRL GL. The outcome was an expressed desire to bridge the gap between the two standards, especially in the light of the possible market fragmentation to proprietary standards as a result of the lack of a single solution. The barrier identified was the funding to support the necessary work and a call for interested organisations to support the effort was made (TBG12 communiqué, 8 April, 2008).

Skirmishes at the front

It may be that recently XBRL has gained a significant foothold in France in a position that EDIFICAS participants seem happy to relinquish. XII and the IASC XBRL team have been involved in a project to create an XBRL platform to provide the European bank regulators with a standardised format for collecting data from regulated national jurisdictions (the COREP and FINREP projects, see www.XBRL.org).

EDIFACT has proved its competence in transport in transactions and commercial operations. EDIFACT has nothing to prove. XBRL should have a position elsewhere. Nature detests empty space! Between the banks and the banking commission, there was nothing. XBRL can take its place in this 'space.' (EDIFICAS informant)

On the XBRL side – the potential is seen as far greater, however:

Authorities like 'Banque National de Belgique' will decide like in Belgium that you have no choice, XBRL must be used, and everybody will follow the trend! It is not a question any more of knowing if it will be used, but when it will be imposed by the French institutions. (Interview, XBRL France informant)

The push for pan-European systems of reporting to support a single market has been used as a basis for arguing that XBRL is congruent with the interim step of a 'unified reporting approach' in member states (Lépicier, 2008). It is also claimed that XBRL has the support of the European Parliament (Colgren, 2008; Lépicier, 2008). It should be noted, however, that the European Parliament Opinion (ECON) on simplified business environment (22nd Jan, 2008) promotes the use of new technology and only gives XBRL as an example rather than directly recommending its use. XBRL is moving into the spaces that are made available by the European changes and there are two projects being developed using XBRL tagging as the basis for data exchange with a regulator in France. One is the *Infogreffe* project for the filing of financial reports with the registrant's office and the other is Euronext for the submission of prospectuses (Lépicier, 2008).

An important question is why is XBRL moving into this space apparently uncontested by ebXML? It has become an assumption in some quarters that XBRL is the only XML based standard for business reporting (ICAEW, 2004). Since there is no mapping between XBRL and ebXML or EDIFACT, then in the French setting in particular, consideration should be given to the impact of requiring the same submitting entities to produce information for different government systems using incompatible standards. Some of the benefits claimed for XBRL relate to the ability to achieve 'straight through reporting' by building the tags back into the accounting system (Locke and Lowe, 2007). As a minimum, this potential advantage will be reduced, as would the ability to retain the transaction tags from ebXML data as a basis for further processing through to reporting. The complexity and size of databases or documents to store source data tagged in multiple systems is likely not to be cost effective or manageable.

Concluding Comments

We have provided a necessarily partial rendering of the translations, detours, allies and delegations that are involved in the efforts of the two major alliances seeking to cement a place for their standards for the submission of financial data to regulators. The fabrication of the standards was subject to path dependence because of the timing of the development of XML and as a result they differ in the strength of their prescription, that is, the restrictions they place on human action. XBRL is extensible – requiring regulators to act to reduce the space for submitters to amend the content of their reports. The network supporting the EDIFACT program is identified as being based in a distinctive geographical and cultural environment which values bureaucratic rigour and accepts the Plan Comptable Général and *dirigisme*. The XBRL approach on the other hand emphasises speed and adopts the rhetoric of the free market. Local influences and timing have affected the structure of both of these global standards; one emphasising readability and flexibility and the other rigour and efficiency. Even on a technologically even playing field – the differences persist and are reflected in the inability of the two groups to work together on ebXML and XBRL GL.

One interviewee with a unique perspective argues that:

Trying to oppose EDIFACT and XBRL is a false debate. Jedeclare.com works very well with the DGI direction des impôts. The DGI has spent a lot of money … and they don't want to change. It's not worth it to negotiate - it's enough to drive you crazy; XBRL and EDIFICAS are complementary then and I wear several hats... (Conseil Supérieur de l'Ordre des Experts-comptable, participant in both EDIFICAS and XBRL)

EDIFACT, XBRL and ebXML overlap in their coverage of the business reporting domain and it may be that they can operate in separate, complementary, applications. The difficulty is that there is no entity in any of the networks described that offers a strong voice for the interests of SMEs and other users. The EDIFACT Jedeclare.com portal claims to have simplified the submission process and reduced the cost for these groups. The portal is consistently reported to work well, but what is the plan for the future? Will the declarants need to maintain the systems to submit this way indefinitely or will it be migrated to an ebXML system which, although it uses a different base technology has the same message structures as EDIFACT?

Introducing XBRL into other applications for providing regulated submission such as infogreffes may build into the reporting infrastructure incompatible standards, perhaps reducing the efficiencies that would otherwise have been available to submitting entities. Can businesses and society be sure that the protagonists care as much about the interests of the final user as they do in achieving dominance for their standard? Who is governing these 'governments' (Camp and Vincent, 2004) and what values should be brought to bear in choosing one approach to standard setting over another? It would be comforting to conclude that we can rely on the 'invisible hand' of market forces to select the best standard. However, despite the joint observation of the bodies developing ebXML and XBRL GL that it would be better to work together, differences ostensibly over the need for speed, have stymied attempts over the years. It could be that personal attachments and entrenched views perhaps based in the cultural differences outlined earlier are also barriers. Yet both groups absorb resources and may ultimately impose switching costs on submitting entities as a result of their inability to co-operate. There are concerns here that better cooperation could help to assuage. There is no doubt about the importance of the data communication standards that the EDIFICAS and XBRL groups are involved in fabricating. It is therefore a reasonable expectation that the allies in these networks work as hard at achieving compatibility and coalescing on a single standard as they seem to do on achieving dominance.

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